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EXAMINER	
HOFFMANN, JOHN M	

ART UNIT	PAPER NUMBER
1791	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,589	HONG ET AL.	
	Examiner	Art Unit	
	John Hoffmann	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: heating the tube at a higher temperature than a softening temperature is not mentioned in the specification, nor is the optimizing of the inner diameter.

As pointed out in **MPEP 608.01(o)**:

> Note that examiners should ensure that the terms and phrases used in claims presented late in prosecution of the application (including claims amended via an examiner's amendment) find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description, see 37 CFR 1.75(d)(1). If the examiner determines that the claims presented late in prosecution do not comply with 37 CFR 1.75(d)(1), applicant will be required to make appropriate amendment to the description to provide clear support or antecedent basis for the terms appearing in the claims provided no new matter is introduced.

As indicated above, examiner could not find any antecedent basis for the language and any support appears to be very unclear. Thus it is deemed that a prima facie showing has been made of lack of clear support or antecedent basis. The burden is now on applicant to demonstrate clear support or antecedent basis for the claim language.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms “clad/core” and “etching/collapsing” are indefinite as to their meaning. In the first, the "/” seems to indicate “or” but in the second it seems to mean "and". It is unclear which it is.

The language heating “at” a temperature is indefinite as to its meaning throughout claim 1. The term “heating” indicates the addition of heat, which will cause temperatures to rise, but the term “at” suggests the temperature does not change. Thus it is unclear whether the claim requires the temperature to change, or increase. And if the temperature does increase, it is unclear whether the higher temperature is the starting temperature or the final temperature. In other words, whether heating “at a higher temperature" is interpreted as heating “to” the higher temperature, or that the tube is “at” the higher temperature and then it is heated (to a yet higher temperature). It is noted that there is no mention of the various steps of heating “at a higher temperature” anywhere in the specification so as to help one understand what is meant by the claim language.

There is confusing antecedent basis for the "higher temperature" at lines 10 and 13 is the same higher temperature as the higher temperature of lines 6-7. Likewise, it is unclear whether all of the softening temperatures are the same.

There is no antecedent basis for "the inner diameter" (claim 1, lines 10-11). There is no indication that the tube is a circular tube. As per page 8, line 24, it appears that the tube might be oval.

The claim sets forth that the tube is optimized, but it is unclear what it is optimized for: a speed of closing? optical loss? Mode dispersion? Dip minimizing? or something else. There is no mention in the specification as to any such optimizing. At best there is optimizing of a multimode *fiber*; since dependent claim 10 is directed to a single-mode fiber preform it is clear that the optimizing is not directed towards that optimizing. Since there is no indication or guidance as to what this optimization can or cannot be directed to, one of ordinary skill would not be able to reasonably ascertain the metes and bounds of the present claims

It is unclear what is meant by the existing dip is “minimized”. As indicate by the Abstract and elsewhere, there are two modes, one where the dip is minimized, and another where it is eliminated. Since claim 1 requires that the dip is “existing” it is clear that the claims do not read on those methods where the dip is eliminated (i.e. non-existing). However there is no guidance as to what constitutes a "minimized" dip that is "existing". It is unclear how much of a dip constitutes a "minimized" dip.

Claim 2: the term "ratio" is indefinite as to what is meant. It is unclear if the claim means that the ratio a value between 2.5:1 and 30:1, or that the ratio is "2.5:30". It is noted that the ratio is more easily written 1:12, thus suggesting that applicant is intending to claim a range of ratios. It is also unclear if the “O2" is in addition to the “oxygen”. Or to put it another way assuming the “oxygen” and O2 are the same thing, it

is unclear if the claim requires that the O2 must flow at 50 -120 sccm (claim 3) and then mix to form the etching claim. It is also unclear if claim 3 requires that the flow rate is "between" the two values, or if it literally means that the flow rate must change from "4 to 20 sccm" - compare to claim 5 which clearly indicates that there is range and only one value within the range is needed to meet the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1- 3, 5, 6, 8, 11, 13 and .14 are rejected under 35 U.S.C. 102(b) as being anticipated by Pluijms 4793843.

The depositing step is disclosed substantially at col. 1, lines 45-47.

The collapsing process is disclosed at col.3, lines 6-10. It is inherent that such requires heating since glass requires elevated temperature to cause deformation. See also col. 4, line 31.

As to the etching/collapsing process, see fore example col. 4, lines 34-36. As to it being optimized: it is deemed that it is optimized for the Pluijms process. Applicant has not set forth what the diameter is optimized for - it is deemed that Pluijms' diameter is optimized for the final Pluijms product.

As to the closing process: Examiner first notes that the claims are very broad, in that there is no stated/indicated boundaries for the last three claimed processes of the method. Each of the “collapsing”, “etching/collapsing” and “closing” processes entail the same thing – a reduction in the inner diameter of the inner diameter. The disclosure sets forth no distinction as to when one ends and the other starts – or even if they can occur concurrently (partially or completely). Since applicant has not set forth any sort of boundary between the "etching/collapsing process" and the "closing process" the prior art need not have any specific boundary between the two. The "closing process" can begin any time - even an arbitrary time.

Thus it is deemed that Plumijms has a closing process that begins when the tube first has an inner diameter that is 0, or alternative, when the tube first has a diameter one half of the starting diameter (col. 3, line 8).

Claim 2: see col. 4, lines 4-5: such is a ratio 4.8:1 which is deemed to be within a range of 2.5:1 to 30:1.

Claim 3 is met because 48 sccm is 50 sccm written to 1 significant digit.

Claim 5: it is deemed that one can consider the Pluijms “etching/collapsing process” to start at the same time as the “collapsing process” – thus during the etching/collapsing, the inner diameter at some portion is within the 2-4 mm range. One cannot go from 17 mm (col. 3, line42) to 1 mm (col. 3, line8) without passing through the 2-4 mm range. The claim does not recite that the optimized diameter is within the 2-4 range. See also above, that applicant has claimed/described the invention broadly – in

a manner which does not require any particular starting or ending conditions for the claimed processes.

Claims 6 and 13: it is clear the processes occurs along all portions.

Claims 8, 11 and 14 are clearly met.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4, 7, 9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pluijms 4793843 as applied to claim 1 above, and further in view of Keim 5160520 and French 4154591.

Claims 4, 7, 9, 10 and 12 all limit various process parameters. It is clear from Keim and French that the variables are known result effective variables. It would have been obvious to perform routine experimentation to determine the optimal processing parameters so as to make better preforms faster - depending upon the size of the preform. For example, claim 12 – the optimum flow rate would depend upon the size of the inner diameter. Clearly a 30 cm inner diameter tube would have different flow rate compared to a 1 cm inner diameter tube.

From MPEP 2144.05

II. OPTIMIZATION OF RANGES
A. Optimization Within Prior Art Conditions or Through Routine Experimentation
Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); >see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages.");< ** In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).
B. Only Result-Effective Variables Can Be Optimized
A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mazzarese is cited as being cumulative to Pluijms.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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